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Responsibility of Local Governments to Most
Effectively Plan for Natural Disaster Mitigation**

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Sustainability at the Edge: The Opportunity and Responsibility of Local Governments to Most Effectively Plan for Natural Disaster Mitigation

by Patricia E. Salkin

Editors' Summary: The traditional link between disaster mitigation and local land use planning was highlighted by the Disaster Mitigation Act (DMA) of 2000, which emphasizes the need for mitigation coordination among state and local entities. In this Article, Patricia E. Salkin looks at the role of local governments in natural disaster mitigation, specifically, how local governments may use traditional land use powers, such as the police power, to protect against disasters. She cites DMA provisions that offer financial incentives to states that work with local governments to plan for growth and disasters; she also sets forth case studies to illustrate how states can create vertical links among federal, state, and local entities to coordinate disaster mitigation strategies.

I. Introduction

From the recent flooding in the southern tier of New York State to the wildfires in California, natural disasters can result in loss of lives, property damage, irreparable harm to the natural environment, and threats to public health. The costs associated with any one of these consequences can be minimized, if not avoided, through effective proactive local government action regardless of federal or state mandates to act. Sustainable communities can only be accomplished through a process of local land use planning and development controls that meet the needs of the present without compromising the ability of future generations to meet their own needs.¹ Essential to meeting this goal is achieving communities that are resilient to natural disasters.² Municipal land

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1. This is the definition of "sustainable development" offered by the Brundtland Commission in 1987. See WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE 43 (1987). "Essentially, sustainability means that decisions made by the present generation will not reduce the options of future generations, but will pass on to them a natural, economic, and social environment that will provide a high quality of life." See FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), PLANNING FOR A SUSTAINABLE FUTURE: THE LINK BETWEEN HAZARD MITIGATION AND SUSTAINABILITY 9 (2003), available at <http://www.fema.gov/pdf/fima/364ch1.pdf> [hereinafter FEMA, PLANNING FOR A SUSTAINABLE FUTURE].
2. FEMA, PLANNING FOR A SUSTAINABLE FUTURE, *supra* note 1, at 6 ("Disaster resilience focuses community attention on issues related to sustainable development and livability because it is an issue that

use planning is the most effective method for achieving a long-term reduction of community vulnerability to multiple natural hazards.³

cuts across social, economic, and environmental lines.") *Id.* at 7 ("Land use planning to reduce natural hazards is ultimately and fundamentally about promoting a more sustainable human settlement pattern and living more lightly and sensibly on the earth.") *Id.* at 20 (quoting Timothy Beatley). See also ANNA K. SCHWAB & DAVID J. BROWER, SUSTAINABLE DEVELOPMENT AND NATURAL HAZARDS MITIGATION (1999) [hereinafter SCHWAB & BROWER] ("Neither sustainable development nor hazard mitigation are brand new ideas. Yet it is not until recently that these concepts have become widely recognized as legitimate, 'doable' principles to be incorporated into decision-making. And it is not until even more recently that the two concepts have been coupled as complementary methods for reaching the same broad goals."). SCHWAB & BROWER, at 8.

3. INSTITUTE FOR BUSINESS & HOME SAFETY, ARE WE PLANNING SAFER COMMUNITIES? RESULTS OF A NATIONAL SURVEY OF COMMUNITY PLANNERS AND NATURAL DISASTERS (2002). Citing to a 2001 survey of public and private emergency managers, code specialists, and engineers conducted by Raymond Burby, which found that along with building codes, land use planning was ranked most effective as a tool to achieve hazards vulnerability reduction. See RAYMOND J. BURBY, DELHI SURVEY OF THE IMPACTS OF HAZARDS ADJUSTMENT ON PROPERTY LOSSES FROM SELECTED NATURAL HAZARDS, 2000-2050 (2001). See also SCHWAB & BROWER, *supra* note 2:

Sustainable development is process-oriented, and does not focus on a static world order; instead it involves a dynamic, evolutionary continuum of action that will forever need readjusting to fulfill its mission. As part of this movement, hazard mitigation must also be seen as more than an end-state. We do not merely nail down shutters over the windows when gale force winds are predicted. Instead, hazard mitigation involves a constant search for ways to incorporate mitigative concepts into development decisions to reduce our vulnerability to natural hazards for today and tomorrow.

Id. at 23.

Theoretically, local land use planning and disaster mitigation have always been inextricably intertwined, but the important role of municipal planning has recently gained more prominence as a result of the Disaster Mitigation Act (DMA)⁴ of 2000. The DMA emphasizes, among other things, the need for “State, Tribal, and local entities to closely coordinate mitigation planning and implementation efforts,”⁵ to establish “a national program for pre-disaster mitigation, and to streamline administration of disaster relief.”⁶ There are many examples of federally initiated planning mandates to state governments (requiring the cooperation and participation of tribal and local governments) to mitigate a wide variety of potential natural hazards such as the Coastal Zone Management Act (CZMA),⁷ the Community Rating System of the National Flood Insurance Program,⁸ the Safe Drinking Water Act (SDWA),⁹ and the Water Resources Planning Act.¹⁰ In addition, myriad federal programs, such as the National Landslide Hazards Mitigation Strategy, recognize the critical need for new partnerships between government at all levels, particularly

local governments, as mitigation necessarily occurs at the local level.¹¹

Across the country, local governments maintain day-to-day responsibility and control over the use of the vast majority of lands that abut the nation’s edge¹² and other environmentally sensitive areas. Land use patterns are determined, infrastructure is designed and provided, and many other development issues are decided at the local level, where natural hazards are experienced and losses are suffered most directly.¹³ Local governments are on the front line for ensuring the public health, safety, and welfare when a disaster occurs.¹⁴ Although there are many requirements at the federal and state levels for various levels of government to produce specific plans to address unique potential hazards, e.g., hurricanes, flooding, earthquakes, wildfires, drinking water contamination, these plans fail to be effective without appropriate incorporation into locally developed comprehensive land use plans and subsequent implementation through local land use planning and zoning techniques.¹⁵ In addition to the potentially devastating human impacts resulting from disasters, there are substantial economic costs resulting from property and infrastructure damage as well as from contamination of significant natural resources, all of which can be mitigated through local action. During the last decade, insurance companies in the United States paid more than \$90 billion to cover catastrophe losses, and gov-

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4. Pub. L. No. 14 Stat. 1522. This Act amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the act or the Stafford Act) and emphasizes the importance of planning for disasters before they occur at all levels of government. In addition to the Stafford Act, other federal laws designed to deal with planning for potential natural disasters include the Coastal Barrier Resources Act (this Act, among other things, provides that high-hazard barrier regions are not eligible for federal flood insurance); the National Environmental Policy Act (requiring heightened procedural review of planning and federal actions); and the National Flood Insurance Act (offers federally backed flood insurance to communities that have adopted minimum floodplain management regulations).
 5. FEMA, MULTI-HAZARD MITIGATION PLANNING GUIDANCE, UNDER THE DISASTER MITIGATION ACT OF 2000, at v (2004), available at <http://www.fema.gov/fima/guidance.shtm>.
 6. FEMA, DISASTER MITIGATION ACT OF 2000—HIGHLIGHTS AND IMPACTS (2001), available at http://www.fema.gov/regions/v/news-letter/news_n3.htm. The DMA offers increased aid to the state, town, or tribe that has voluntarily submitted a mitigation plan that “outlines processes for identifying the natural hazards, risks, and vulnerabilities of” that area. *Id.*
 7. 16 U.S.C. §§1451-1465, ELR STAT. CZMA §§302-319. In addition to the requirements contained in the CZMA, the U.S. Commission on Ocean Policy released its report in September 2004 calling for a new, coordinated, and comprehensive ocean policy to, among other things, manage coasts and their watersheds (Chapter 9) and guard people and property against natural hazards (Chapter 10). See U.S. COMMISSION ON OCEAN POLICY, AN OCEAN BLUEPRINT FOR THE 21ST CENTURY: FINAL REPORT OF THE U.S. COMMISSION ON OCEAN POLICY (2004), available at http://oceancomission.gov/documents/full_color_rpt/welcome.html.
 8. For example, the community rating system for the flood insurance program provides credits for local governments that provide increased protection to new development by, among other things, mapping areas prone to flooding and preserving critical open space, and extra credit is awarded where this is done in communities that are growing. See <http://www.fema.gov/nfip/crsactiv.htm> (last visited Mar. 6, 2005).
 9. 42 U.S.C. §§300f to 300j-26, ELR STAT. SDWA §§1401-1465. Although the Act was originally enacted “to ensure that public water supply systems meet minimum national standards for the protection of public health,” and the fact remains that waterborne disease in the United States is relatively rare (see Sarah J. Meyland, *Land Use and the Protection of Drinking Water Supplies*, 10 PACE ENVTL. L. REV. 563 (1993)), fears of terrorist plots to contaminate sources of the country’s drinking water supply have recently elevated attention to the vulnerability of this natural resource.
 10. 42 U.S.C. ch. 19B. Funding was made available to states to encourage their participation in water and related land resources planning. See *id.* §1962c.
 11. U.S. DEPARTMENT OF THE INTERIOR, U.S. GEOLOGICAL SURVEY, NATIONAL LANDSLIDE MITIGATION STRATEGY: A FRAMEWORK FOR LOSS REDUCTION (2000) (Open File Report 00-450).
 12. According to a recent report published by the National Oceanic and Atmospheric Administration (NOAA), although the narrow coastal fringe accounts for only 17% of the contiguous land area in the United States, it is home to more than one-half of the country’s population with roughly 153 million people, representing 53% of the population living in the 673 U.S. coastal counties. By 2008, the population along the coastline is expected to increase by approximately seven million people. See NOAA, POPULATION TRENDS ALONG THE COASTAL UNITED STATES: 1980-2008 (2005), available at http://www.oceanicservic.noaa.gov/programs/mb/supp_cstl_population.html.
 13. See SCHWAB & BROWER, *supra* note 2.
 14. See David G. Tucker & Alfred O. Bragg, *Florida’s Law of Storms: Emergency Management, Local Government, and the Police Power*, 30 STETSON L. REV. 837 (2001) (“Local governments exercise their most basic and yet most coercive powers when managing responses to these threats to protect the health, safety and welfare of their citizens.”). The Pennsylvania Emergency Management Agency notes a number of mitigation measures within local control including: planning and zoning; open space preservation; building codes and enforcement; stormwater management; property protection (including property acquisition and elevation of structures); and natural resource protection (including wetland protection and riverine protection). See <http://www.pema.state.pa.us/pema/CWP/view.asp?a=198&Q=179273> (last visited Mar. 2005).
 15. For example, the state of Washington’s Hazard Mitigation Strategy acknowledges that “[l]ocal government resources are adversely impacted by redundant planning requirements when these requirements and standards are not coordinated. Failure to coordinate also reduces the chance that plans and standards will be carried out to the fullest potential.” See EMERGENCY MANAGEMENT DIVISION, WASHINGTON STATE MILITARY DEPARTMENT, WASHINGTON STATE HAZARD MITIGATION STRATEGY (2000), available at <http://emd.wa.gov/3-map/mit/mit-pubs-forms/hazmit-plan/hazmit-plan-idx.html>. Researchers have commented nationally that “[i]n many communities, hazard mitigation plans are prepared by emergency management staff members and are not tied to comprehensive plans . . .” and they assert that whenever possible, the two plans should be integrated. David R. Godschalk et al., *Integrating Hazard Mitigation and Local Land Use Planning*, in 2 MODERNIZING STATE PLANNING STATUTES: THE GROWING SMART WORKING PAPERS 62 (APA 1998) [hereinafter GODSCHALK ET AL.].

ernments paid tens of billions of dollars more.¹⁶ Damages just in flood-prone areas result in an average cost of about \$5 billion per year.¹⁷ It has been suggested that a lack of appropriate land development planning is at least partially to blame for what has evolved into unsustainable development across the country's disaster-prone areas.¹⁸ And this failure to act effectively may expose governments to additional liability.¹⁹

Part II of this Article briefly sets forth the requirements and opportunities presented by the DMA specifically as they relate to local land use planning and zoning. Part III provides a brief review of the historical and legal framework within which local governments manage the use of land within their boundaries, including requirements of balancing private property rights with government's responsibility to protect the public health, safety, and welfare. This part further provides a number of specific examples of how various local governments across the country have employed these powers and tools to plan for disaster mitigation, with and without a federal or state mandate to do so. It also includes a case study in intermunicipal cooperation for the protection of the New York City watershed. Part IV offers observations and recommendations on how to further maximize the opportunities on the front line for disaster mitigation by local governments. Part V concludes that necessary tools are in place to balance government's responsibility to protect the public health, safety, and welfare with the interests of property owners, and that the strategies outlined in

Part IV are necessary to ensure successful implementation of the techniques outlined in Part III.

II. Integrating Disaster Mitigation Planning Into Local Land Use Planning and Zoning

A. The DMA

The DMA is intended to "alleviate the suffering and damage that results from disasters by . . . encouraging hazard mitigation measures . . . including development of land use and construction regulations."²⁰ This encouragement comes in the form of pre- and post-disaster aid and assistance.²¹ States and local governments that have an approved mitigation plan are eligible to receive increased financial assistance under the Hazard Mitigation Grant Program,²² and funding may be increased depending on whether the mitigation plan meets a standard or enhanced set of requirements.²³ Plans must be approved by the Federal Emergency Management Agency (FEMA) prior to the receipt of federal funds for hazard mitigation measures.²⁴ In February 2002, FEMA published an Interim Final Rule providing information on the policies and procedures to be used in mitigation planning.²⁵ While mitigation plans are required to account for natural disasters only, FEMA "supports those jurisdictions that choose to consider technological and manmade hazards in their respective mitigation plans."²⁶

1. State Mitigation Plans

State mitigation plan requirements vary depending on the type of plan developed. A standard mitigation plan allows the state to qualify for funding based on 7.5% of the total eli-

16. See Diana L. McClure et al., *Are We Planning Safer Communities? Results of a National Survey of Community Planners*, OBSERVER, July 2002, available at <http://www.colorado.edu/hazards/0/july02/july02a.htm>.

17. Sara Shipley, *A Flood of Development*, ST. LOUIS POST-DISPATCH, July 31, 2003, at A11.

18. FEMA, *PLANNING FOR A SUSTAINABLE FUTURE*, *supra* note 2 ("Land development patterns and lack of community planning over the past several decades have emphasized sprawling suburban communities and homes constructed with little attention paid to standards designed to protect people and property from impacts associated with high winds, flooding, wildfire, or other natural hazards.") *Id.* at 4-5. See also GODSCHALK ET AL., *supra* note 15 ("[t]he general public and locally elected officials tend to minimize the importance of discouraging development in hazardous areas. In fact, localities sometimes adopt public policies that unwittingly encourage such development.") *Id.* at 57.

19. See Denis Binder, *Emergency Actions Plans: A Legal and Practical Blueprint "Failing to Plan Is Planning to Fail"*, 63 U. PITT. L. REV. 791 (2002) (the author asserts that under a negligence analysis, the "ease of preparing and periodically updating an emergency action plan will often outweigh the risk of not doing so") *Id.* at 793. And that even where a plan is not required by statutes or regulation, "failure to prepare such a plan could risk substantial liability under the common law if a tragedy results which a plan could have averted." *Id.* at 795. The author also makes the point that these plans are not static and that they require periodic review and revision as conditions change. See also Christopher City, *Duty and Disaster: Holding Local Governments Liable for Permitting Uses in High-Hazard Areas*, 78 N.C. L. REV. 1535 (2000):

Local governments have largely escaped responsibility for permitting development in hazard-prone properties even though they are in the best position to mitigate natural hazard damages through their ability to oversee directly their land use decisions and through their direct control over the rate, timing, and location of development. Because of this ability to reduce hazard risk, local governments should be liable for land use decisions that increase the exposure of people and property to the path of predictable natural hazards.

See also Meyland, *supra* note 9 (discussing regulations and case law that hold municipalities liable for failing to protect and provide safe drinking water where the drinking water is publicly supplied).

20. 42 U.S.C. §5121(b).

21. See, e.g., *id.* §§5121(6), 5131(c), 5133(c).

22. FEMA, *MULTI-HAZARD MITIGATION PLANNING GUIDANCE ix* (2004), available at http://www.fema.gov/doc/fima/introduction_031904.doc [hereinafter FEMA, *MULTI-HAZARD*]. The Hazard Mitigation Grant Program (HMGP) makes funds available for the development of "state, tribal and/or local mitigation plans" along with projects that may offer protection to private property such as the development of warning systems or even the acquisition of property. See 44 C.F.R. §206.434 (2005). The acquisition of property is allowed provided the government uses the land for open space, recreational purposes, or as wetlands.

23. See FEMA, *MULTI-HAZARD*, *supra* note 22. The five requirements for the standard state mitigation plans are that the plans must: (1) describe how the state coordinates with local mitigation planning efforts; (2) develop a mitigation strategy based on local and state vulnerability analyses and risk assessments; (3) describe how the state provides funding or technical assistance to local governments; (4) discuss how the state prioritizes jurisdictions that will receive mitigation planning and project grants and other state assistance; and (5) establish a plan maintenance process. Enhanced mitigation plans must also: (1) demonstrate a broad, programmatic mitigation approach; and (2) demonstrate a systematic and effective administration and implementation of existing mitigation programs. *Id.* at ix.

24. 42 U.S.C. §5165.

25. 44 C.F.R. §201.1(a) (2005). The rationale behind publishing an interim rule instead of waiting for a final rule to be adopted rests on the time requirements since "certain types of Stafford Act assistance are conditioned on having an approved mitigation plan." See FEMA, *MULTI-HAZARD*, *supra* note 22, at v. FEMA has stated that these rules should be followed until a final rule is published. *Id.* The regulations were valid until January 1, 2005, and nothing further has been published to date.

26. FEMA, *MULTI-HAZARD*, *supra* note 22, at vii.

gible disaster assistance funds available,²⁷ whereas an enhanced mitigation plan will allow a state to qualify for up to 20% of these funds at the time a disaster is declared.²⁸ Both types of state plans require significant public involvement and have specific content requirements but differ on the level of preparedness, and both require the state to provide technical assistance and training to local governments.²⁹ Every mitigation plan must include five basic elements: (1) a description of the planning process; (2) an assessment of the risks faced; (3) a strategy for reducing risks; (4) a section on coordination; and (5) a maintenance section.³⁰

a. The Standard Mitigation Plan

The standard state mitigation plan requires a section on: “[H]ow input was sought from individuals or other agencies, and how the plan was prepared.”³¹ FEMA notes that “the planning process should include coordination with other State agencies, appropriate Federal agencies, interested groups, and be integrated to the extent possible with other ongoing State planning efforts”³² To satisfy the “ongoing state planning efforts” requirement, FEMA recommends having mitigation planners or specialists serve on the planning team, as well as a description of ongoing planning efforts such as comprehensive plans or emergency improvement plans along with building codes, floodplain ordinances, and land use regulations that have been integrated into the planning efforts.³³ The standard plan has multiple requirements that focus on identifying possible natural hazards within the state, including discussing previous hazards and assessing the probability of future events.³⁴ When identifying the location of natural hazards, FEMA requires using maps and geographic information system (GIS) software when it is appropriate.³⁵

The mitigation strategy must provide a “blueprint for reducing losses identified in the risk assessment,”³⁶ a list of goals the state wishes to achieve, and mitigation actions and activities the state is considering.³⁷ The standard plan also requires the state to identify the “timeframe by which local plans will be reviewed and linked to the State Mitigation Plan.”³⁸ The last requirement under the standard plan is a description of the maintenance process. This section is designed to ensure that the plan will have an established procedure to monitor and update the state’s mitigation strategy as appropriate.

b. The Enhanced State Mitigation Plan

The enhanced state mitigation plan requires, among other

things, that prior to acceptance, the state must demonstrate “that the plan is integrated to the extent practicable with other State and/or regional planning initiatives, [such as] comprehensive growth management, economic development, land development, and/or emergency plans.”³⁹ The state must either require or encourage “local governments to use a current version of a nationally applicable model building code or standard that addresses natural hazards as a basis for design and construction of State- sponsored mitigation projects.”⁴⁰ The enhanced plans must also demonstrate “a systematic and effective administration and implementation of existing mitigation programs.”⁴¹

2. Local Requirements and Responsibilities Under the DMA

A local mitigation plan acts as a guide “for decision makers as they commit resources to reducing the effects of natural hazards.”⁴² Local governments are required to review their plan at least every five years and to update it when necessary as a condition to receiving continuing funding.⁴³

Local mitigation requirements are similar to those for the state mitigation plans. A significant difference lies in the development of multi-jurisdictional plans. Multi-jurisdictional plans allow local governments to work with other communities to develop a plan that will combat a large hazard.⁴⁴ The actual planning process for local and multi-jurisdictional plans requires community involvement including representatives from neighboring communities, businesses, academia, and agencies involved in regional hazard mitigation as well as private and nonprofit agencies.⁴⁵ “Existing plans, studies, reports, and technical information” are required to be reviewed and incorporated into local plans.

The local plans are required to identify hazards that may affect the community along with their vulnerability to those hazards.⁴⁶ The number and types of buildings in the hazard areas needs to be identified. “The plan must also include a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.”⁴⁷

Local governments are also required to set forth a process by which the mitigation plan will be incorporated into “other planning mechanisms such as comprehensive or capital improvement plans when appropriate.”⁴⁸

III. Local Land Use Planning and Zoning

Since the publication of the model state planning and zoning enabling acts by the U.S. Department of Commerce in 1928⁴⁹ and 1926,⁵⁰ respectively, it has been widely accepted

27. *Id.* at ix.

28. *Id.*

29. 44 C.F.R. §201.3(C)(5).

30. *Id.* §201.4-.6.

31. FEMA, MULTI-HAZARD, *supra* note 22, at 1-5; *see also* 44 C.F.R. §201.4.

32. 44 C.F.R. §201.4(b).

33. FEMA, MULTI-HAZARD, *supra* note 22, at 1-11.

34. 44 C.F.R. §201.4(c).

35. *Id.* §201.4.

36. *Id.* §201.4(c).

37. *Id.* §201.4.

38. *Id.*

39. *Id.* §201.5(b)(1).

40. *Id.* §201.5(b)(4)(iv).

41. FEMA, MULTI-HAZARD, *supra* note 22, at ix.

42. 44 C.F.R. §201.6.

43. *Id.* §201.3(d)(2).

44. *Id.* §201.6(a)(4).

45. *Id.* §201.6.

46. FEMA, MULTI-HAZARD, *supra* note 22, at 3-9.

47. 44 C.F.R. §201.6.

48. *Id.*

49. A preliminary version of the Model City Planning Act was released in 1927 and a final version was published in 1928. A copy

that land use planning and zoning are within the regulatory control of local governments. Since local governments are creatures of the state, they lack inherent powers but may exercise those powers given to them by the state through constitutional or statutory provision. Historically, states have largely delegated to local governments through the police power, the ability to enact regulations and laws designed to protect the public health, safety, and welfare. The U.S. Supreme Court has noted that “[t]he police power extends to all the great public needs . . .”⁵¹ and that the “[p]rotection of the safety of persons is one of the traditional uses of the police power . . .”⁵² Zoning was upheld as an early legitimate exercise of the police power.⁵³

While it is clear that local governments may act pursuant to direct grants of power from the state, whether local governments possess certain implied powers to enable them to regulate certain types of activities varies from state to state. There are generally four categories of home rule power: (1) inherent home rule powers that are traced to the implied power of local self-governance; (2) constitutional home rule powers whereby municipalities obtain their zoning powers under a constitutional delegation; (3) legislative authority whereby state statutes vest municipalities with specific authority to engage in land use planning and zoning; and (4) authority conveyed through a local (city) charter.⁵⁴

Local governments are vested with significant powers to control the use and development of land, but not without limitation. In *Lucas v. South Carolina Coastal Council*,⁵⁵ the Court held that a regulation which denies a landowner *all* economically viable use of his/her property constitutes a per se regulatory taking. In this case, the South Carolina Coastal Council adopted regulations that in essence prohibited the landowner from using his beachfront property for any economic, e.g., development, purpose. Acknowledging that this kind of total deprivation is rare, the Court noted that it was important to determine what property rights the landowner had when the property was purchased, as limitations that may exist in background principles of property law, e.g., the common law of nuisance, may impact allegations of a total taking. This case does not stand for the proposition that state and local governments may not plan and regulate land uses along the coastlines, rather it reminds governments of the need to balance the economic rights of private property owners with the public health, safety and welfare.

Similarly, in *Dolan v. City of Tigard*,⁵⁶ the city attempted, among other things, to address floodplain mitigation by requiring a property owner to dedicate a greenway in the floodplain to the city as a condition of receiving a building permit to enlarge her store. The Court found that since the

proposed development would not encroach upon the city’s existing greenway, the requirement lacked the required “rough proportionality” to withstand a Fifth Amendment challenge.⁵⁷ This case simply requires that where local governments adopt regulations designed to mitigate natural disasters, that such regulations be applied to actions that will in fact have an impact upon the ability of the municipality to adequately protect the public health, safety, and welfare. Therefore, had the subject property in *Dolan* been located in the floodplain, some regulation would likely have been upheld. Furthermore, the type of action required is an important consideration—there is a difference between requiring an involuntary dedication or transfer of property to the government versus a requirement to leave a portion of private property undeveloped but still in private ownership. The latter serves as the better model for controlling various aspects of disaster preparedness.

Protecting residents from various types of natural disasters has always been a fundamental value and goal of local land use control. For example, early courts upheld an ordinance that prohibited the storage of oil and gasoline within 300 feet of a residential dwelling unit.⁵⁸ There can be little argument that zoning should protect residents from geological hazards by restricting development on major fault lines or steep slopes, particularly where there is unstable soil; and that zoning should similarly regulate development in areas normally covered by floods.⁵⁹ Furthermore, the health and safety of residents is at risk unless local governments regulate development in and around recharge areas for major aquifers and other water areas where people depend upon wells and groundwater for drinking water.⁶⁰

A. The Local Government Toolbox for Natural Disaster Planning

There are many local land development tools and techniques that can be employed as excellent disaster mitigation techniques. The Pennsylvania Emergency Management Agency explains that “[a] disaster resistant community should have in place a number of safeguards that control where and how development can occur . . .”⁶¹ using as examples, local policy and regulatory documents including: building codes; land use, zoning, and subdivision regulations; comprehensive, capital improvement, and transportation plans; facilities needs studies; population growth and future development studies; and economic development plans.⁶² The North Carolina Division of Emergency Management advises local governments that included in the process of mitigation planning is a local capability assessment that contains an examination of the local zoning ordinance, subdivision ordinance, comprehensive plan/land use plan, capital improvements plan/capital facilities plan, floodplain management plan, building code, open space, stormwater management plan, transportation plan, conservation and

of the model Act is available on the Internet at <http://www.planning.org/growingsmart/pdf/CPEnablingAct1928.pdf>.

50. The Standard Zoning Enabling Act was developed in 1921, published by the federal government in 1924, and amended in 1926. A copy of the 1926 Act is available on the Internet at <http://www.planning.org/growingsmart/pdf/SZENablingAct1926.pdf>.

51. *Noble State Bank v. Haskell*, 219 U.S. 104, *opinion amended*, 219 U.S. 575 (1911).

52. *Queenside Hills Realty Co. v. Saxl*, 328 U.S. 80 (1946).

53. *Village of Euclid v. Ambler Realty*, 272 U.S. 365 (1926).

54. See KENNETH H. YOUNG, *ANDERSON’S AMERICAN LAW OF ZONING* §§2.14 to 2.18 (4th ed. 1996).

55. 505 U.S. 1003, 22 ELR 21104 (1992).

56. 512 U.S. 374, 24 ELR 21083 (1994).

57. *Id.*

58. *Pierce Oil Corp. v. Hope*, 248 U.S. 498 (1919).

59. NORMAN WILLIAMS JR. & JOHN M. TAYLOR, 7 *AMERICAN LAND PLANNING LAW* §168:10 (rev. ed. 2003).

60. *Id.*

61. Pennsylvania Emergency Management Agency, *Hazard Mitigation Planning—An On-Line Introduction*, at <http://www.pema.state.pa.us/pema/CWP/view.asp?A=198&Q=179238&pp=12&n=1>.

62. *Id.*

natural resources protection policies, historic preservation plans, and regional plans.⁶³ Effective comprehensive planning coupled with land use regulations designed to produce reasonable development patterns can work together to ensure safer homes, businesses, and communities.⁶⁴ Local governments are beginning to make this connection stronger. For example, working to address disaster mitigation in Kane County, Illinois, it was noted that local “[l]and use plans, zoning ordinances and subdivision standards could better address natural hazards . . .”⁶⁵ and it was recommended that “when they are up for revision, comprehensive plans, land use plans and zoning and subdivision ordinances should incorporate mitigation measures.”⁶⁶ In 1999, the city of Rye, New York, was awarded a grant from FEMA to make its community more disaster-resistant, and among the actions it promised to take were efforts to incorporate mitigation policies in land use decisions to encourage disaster-resistant development. The city also committed to reviewing and strengthening the priority given to floodplain, coastal zone management, erosion control, and wetland values in land use decisions.⁶⁷

1. The Comprehensive Land Use Plan

a. Plan Content

States provide varying levels of guidance in their enabling legislation as to the subject matter that should be or must be addressed in a local comprehensive land use plan.⁶⁸ The American Planning Association’s (APA’s) 2002 *Growing Smart Legislative Guidebook* provides a listing of recommended, required, and optional elements of a plan, including a natural hazards element.⁶⁹ The commentary contained in the guidebook explains that

[s]tates and communities across the country are slowly, but increasingly, realizing that simply responding to natural disasters, without addressing ways to minimize their potential effect, is no longer an adequate role for government. Striving to prevent unnecessary damage from natural disasters through proactive planning that characterizes the hazard, assesses the community’s vulnerability, and designs appropriate land use policies and building code requirements is a more effective and fiscally sound approach to achieving public safety goals related to natural hazards.⁷⁰

The Pennsylvania Emergency Management Agency explains that the benefits of incorporating natural disaster mitigation into local land use plans include: managing and controlling development of land that is subject to natural and technological hazards in a way that is compatible with their frequency and damage potential; balancing property owner’s rights with the social, economic, aesthetic, and ecological costs of development across the community; requiring landowners to accept greater responsibility for the risks they assume for structures built in harm’s way; and limiting the consequences of natural disasters or avoiding them altogether.⁷¹

Some states have mandated that local comprehensive plans contain a mitigation element. For example, Oregon’s statewide planning goals require local governments to, among other things, adopt comprehensive land use plans that “reduce risk to people and property from natural hazards.”⁷² And in Idaho, local comprehensive land use plans must include a component on hazardous areas that contains “an analysis of known hazards as may result from susceptibility to surface ruptures from faulting, ground shaking, ground failure, landslides or mudslides; avalanche hazards resulting from development in the known or probable path of snowslides and avalanches; and floodplain hazards.”⁷³ In California, local comprehensive plans are required to include a “safety element.”⁷⁴

63. HAZARD MITIGATION SECTION, NORTH CAROLINA DIVISION OF EMERGENCY MANAGEMENT, KEEPING NATURAL HAZARDS FROM BECOMING DISASTERS: A MITIGATION PLANNING GUIDEBOOK FOR LOCAL GOVERNMENTS 58-60 (2003), available at <http://www.p2pays.org/ref/14/13618.pdf>. Similarly, the hazard mitigation plan adopted by the state of Alaska in 2004, notes that local “[l]and use planning, zoning ordinances and capital improvement projects are good examples of the types of tools available . . .” to assist with local mitigation efforts. Available on the Internet at http://www.ak-prepared.com/plans/word_docs/SHMPSection%202-3_1June04.

64. See EMERGENCY MANAGEMENT DIVISION, WASHINGTON MILITARY DEPARTMENT, KEEPING HAZARDS FROM BECOMING DISASTERS: A MITIGATION WORKBOOK FOR LOCAL JURISDICTIONS 4 (2003), available at http://www.metrokc.gov/prepare/docs/RHMP_LocalMitigationWkbkFinal.pdf.

65. See http://www.ema.ohio.gov/Documents/Nat_Haz_Mit_Plan/Exec_Summary_9-03.doc.

66. See <http://www.co.kane.il.us/hazards/finalplan/execsum.pdf>.

67. FEMA Region II, *Rye, New York, Signs Agreement to Become Disaster-Resistant Community Under New FEMA Initiative*, <http://www.fema.gov/news/newsrelease.fema?id=10261>.

68. A 2002 report by the Institute for Business and Home Safety found that based upon a national survey of community planners about natural disasters: “From state to state and region to region, there is great variation among communities with regard to adoption of local comprehensive plans and the quality of these plans as they relate to natural hazards.” See INSTITUTE FOR BUSINESS & HOME SAFETY, ARE WE PLANNING SAFER COMMUNITIES? RESULTS OF A NATIONAL SURVEY OF COMMUNITY PLANNERS AND NATURAL DISASTERS (2002), available at <http://www.ibhs.org/publications/view.asp?id=289>.

69. GROWING SMART LEGISLATIVE GUIDEBOOK: MODEL STATUTES FOR PLANNING AND THE MANAGEMENT OF CHANGE ch. 7 (Stuart Meck ed., 2002) [hereinafter Meck]. Recommended elements to be

contained in local comprehensive land use plans include issue and opportunities, land use, land market monitoring system, transportation, community facilities, telecommunications, housing, economic development, critical and sensitive areas, natural hazards, program of implementation, agriculture, forest, and scenic preservation, human services, community design, and historic preservation. *Id.* chs. 7-2 & 7-3.

70. *Id.* chs. 7-142 & 7-143. Citing also to Roger A. Nazwadowsky, *Lawyer-ing Your Municipality Through a Natural Disaster or Emergency*, URB. LAW., Winter 1995, at 9.

71. See <http://www.pema.state.pa.us/pema/CWP/view.asp?a=198&Q=207959&pemaNavDLTEST=%7C4715%7C4749%7C4752%7C>.

72. *Goal 7 of Oregon’s Statewide Planning Goals and Guidelines*, <http://www.oregon.gov/LCD/goals.shtml>. The state of Oregon defines natural hazards under this goal to include “floods (coastal and riverine), landslides, earthquakes and related hazards, tsunamis, coastal erosion, and wildfires.” *Id.* And local governments are empowered to identify and plan for additional natural hazards beyond those identified by the state. *Id.*

73. IDAHO ADMIN. CODE §67-6508(g) (Michie 2005).

74. CAL. GOV’T CODE §65302(g) (West 2005) provides that local comprehensive plans must include a safety element “for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence, liquefaction and other seismic hazards . . . and other geologic hazards known to the legislative body; flooding and wild land and urban fires.”

b. Plan Coordination

While the federal government does not require that local disaster mitigation plans be coordinated or integrated into the local comprehensive plan, some states have affirmatively required this approach. The majority of states, however, fail to specifically mention either a requirement or recommendation for a hazard mitigation element in the local planning enabling acts. Although local governments have the authority to act absent such a provision, it is a missed opportunity to states to better ensure coordination between the required state mitigation plan and myriad local land use plans.

The state of Florida, through the Division of Community Planning, has initiated a number of measures to integrate state and local hazard mitigation planning. For example, local comprehensive plans are required to be updated every seven years and the state has used its “evaluation and appraisal report” process⁷⁵ to identify and promote greater implementation of state disaster mitigation strategies through local comprehensive plans.⁷⁶ While acknowledging that there is no specific statutory or regulatory requirement mandating that local comprehensive plans be revised in accordance with the findings and recommendations in the local mitigation plan, the state offers technical assistance incentives to accomplish this goal.⁷⁷ Oregon fails to require coordinated action, but notes that “[l]ocal governments should coordinate their land use plans and decisions with emergency preparedness, response, recovery and mitigation programs.”⁷⁸ In North Carolina, the State Department of Emergency Management comments to local governments that although a stand-alone mitigation plan may have the “advantage of high visibility,” communities are nonetheless encouraged to link the local mitigation plan with other planning and policy documents already in effect.⁷⁹

75. The Evaluation and Appraisal Report (EAR) process in Florida requires local governments in Florida to adopt an EAR once every seven years “assessing the progress in implementing the local government’s comprehensive plan.” See Evaluation and Appraisal Report Statutory Requirement, F.S. §163.3191 (2005). For more information on EARs, see Division of Community Planning, Florida Department of Community Affairs, *Evaluation and Appraisal Reports*, <http://www.dca.state.fl.us/fdcp/dcp/EAR/index.cfm>.

76. See Division of Community Planning, Florida Department of Community Affairs, *Hazard Mitigation Planning*, <http://www.dca.state.fl.us/fdcp/dcp/hazardmitigation/index.cfm>.

77. *Id.*

In order to provide incentives for local governments to integrate local mitigation strategies into the comprehensive plan, the Division of Community Planning is providing assistance in evaluating the risks and vulnerabilities facing the community and facilitating discussions between local government planning officials and emergency management planners regarding mitigation priorities. The intent is to focus on the use of comprehensive planning and land use strategies to reduce future damage to property and public facilities and buildings, avoid development in hazardous areas and provide for adequate public shelters and reduced hurricane clearance times.

78. State of Oregon, *Guidelines, A. Planning*, <http://www.oregon.gov/LCD/goals.shtml>.

79. Department of Emergency Management, State of North Carolina, *FAQs: Mitigation Planning*, <http://www.dem.dcc.state.nc.us/mitigation/FAQsPlanning.htm>. The state recommends that

[t]he mitigation plan should support and be supported by the local land use plan, comprehensive plan, zoning ordinance, flood plain management plan, and any other policies that dictate land uses or development standards. Some communities may choose to write the Hazard Mitigation Plan as a chapter

In addition, the 2004 state hazard mitigation plan in Alaska provides that “[l]ocal communities should incorporate mitigation concepts and goals into their community comprehensive plans, transportation plans, and capital improvement programs”⁸⁰

The state of Washington acknowledged in its state hazard mitigation plan that while there a number of coordinated state-level plans that deal with hazard mitigation, there is a general failure to coordinate these plans with local governments and local plans.⁸¹ In their state mitigation handbook for local jurisdictions, it is suggested that “mitigation efforts should be integrated with other community planning and development activities, such as preparing land use and subdivision plans and ordinances; preparing capital improvement plans with mitigation activities; enforcing construction and building regulations; and making choices about future spending for infrastructure.”⁸²

Despite the lack of required coordination, local governments across the country have begun to voluntarily integrate disaster mitigation elements into their comprehensive land use plans, providing for essential coordination between various plans and strategies. For example, in Charlevoix County, Michigan, the natural hazards mitigation plan concepts were incorporated into existing elements of the comprehensive land use plan by consideration of the following key land use issues and their relationship to natural hazards mitigation: safe beneficial uses for hazard-prone areas; concentration of population issues; proximity to hazard priority areas; location of public facilities and infrastructure; development standards for public facilities and infrastructure; and consideration of the impact of accumulated development on community systems and facilities.⁸³ Fortunately, municipalities are exercising their broad discretion wisely to promote better land use planning and policies in this area.

c. Intermunicipal Plan Coordination

Given the reality that natural disasters do not stop at the municipal boundary line, it is essential that for mitigation planning to be truly effective, local governments must work together to coordinate their planning and land use control strategies to mitigate the impacts of potential hazards. While many have been urging intermunicipal cooperation

in their local comprehensive plan or land use plan. . . . The benefit of this approach is that mitigation is seen as a necessary component of other governmental operations, and calls for the integration of mitigation into the day-to-day decision making process.

Id.

80. The Alaska plan is available on the Internet at http://www.ak-prepared.com/plans/word_docs/SHMP.
81. WASHINGTON STATE, HAZARD MITIGATION STRATEGY (2000). In discussing this failure of coordination, the state strategy notes: “Local government resources are adversely impacted by redundant planning requirements when these requirements and standards are not coordinated. Failure to coordinate also reduces the chance that plans and standards will be carried out to the fullest potential.” *Id.* at 48.
82. EMERGENCY MANAGEMENT DIVISION, WASHINGTON MILITARY DEPARTMENT, KEEPING HAZARDS FROM BECOMING DISASTERS: A MITIGATION WORKBOOK FOR LOCAL JURISDICTIONS 22 (2003), available at www.metrokc.gov/prepare/docs/RHMP_LocalMitigation/Wbkfinal.pdf.
83. CHARLEVOIX COUNTY, MICHIGAN, NATURAL HAZARDS MITIGATION PLAN 28 (2004), available at <http://www.nwm.org/community/HazardMitigation/>.

or regional approaches to land use planning for some time, disaster mitigation goals provide a compelling argument that demand local government attention and action, especially given the reality that natural disasters do not start and stop wholly within the boundary of a single municipality. Similar to calls for vertical and horizontal consistency between general comprehensive plans and land use regulations, coordination of mitigation plans and elements of local planning and zoning that attempt to address hazard mitigation must contain consistent multi-jurisdictional regulations. While there are examples of municipalities in a region cooperating in the development of the preparation of a single disaster mitigation plan, for instance the Metropolitan Area Planning Council in Boston, Massachusetts, received a grant to prepare a plan for Boston and eight surrounding communities,⁸⁴ what is not happening is any regional or state coordination of the mitigation plans among and between adjoining municipalities.

d. Case Study in Regionalism: The New York City Watershed

Beginning with the “quiet revolution” in the 1970s,⁸⁵ and continuing through the growth management movement in the 1980s,⁸⁶ the smart growth movement in the 1990s,⁸⁷ and the early part of the 21st century, state governments have experimented with a variety of ways to best coordinate and integrate a comprehensive methodology to achieve sustainable communities that by definition, encompass safe communities.

To protect the quality of drinking water in the New York City watershed, the city of New York adopted regulations affecting extraterritorial property that controlled storm-water runoff, the use of pesticides and fertilizers that could seep into the water table, and the discharge and storage of hazardous and solid wastes.⁸⁸ The city of New York also worked with other local governments to encourage the adoption of “whole community planning,” whereby watershed communities who voluntarily adopted local watershed protection plans could control locally the use of lands within their boundaries rather than being subjected to the city regu-

lations.⁸⁹ The whole community planning concept arose out of efforts of the state of New York to bring together federal, state, and local officials as well as other key stakeholders to address in an interjurisdictional and cost-effective manner, the long-term quality protection of the drinking water supply for roughly eight million New York City residents.⁹⁰ The result was a memorandum of agreement to regulate land uses and various pollutants in the watershed signed by more than 60 watershed towns, the city of New York, the state of New York, the federal government, and five environmental groups.⁹¹ The watershed agreement also called for the acquisition of land that would be designated as open space in perpetuity as an integral component of the protection plan.⁹²

2. The Zoning Ordinance and Land Use Regulations

Zoning and other land development regulations control the location, type, and density of new development within the jurisdictional boundaries of the implementing locality. Examples of development regulations that may be employed as effective disaster mitigation techniques include: limitations on how property may be developed in flood zones; setbacks from fault lines (and shorelines and other areas prone to natural disasters), steep slopes, and coastal erosion areas; and overlay zones that introduce additional requirements over sensitive environmental areas such as wetlands, dunes, and hillsides.⁹³ In Alabama, municipalities have specifically incorporated the state’s Coastal Construction Control Line into their zoning ordinance as part of their mitigation strategy.⁹⁴ What follows are examples of various zoning techniques and other land use controls that can be used by local governments to implement disaster mitigation strategies identified in local plans.

a. Nonconforming Uses

While there are many regulatory techniques that municipalities may choose from to effectively control the use of land so as to minimize negative effects of natural disasters, the fact remains that significant amounts of land within a municipality may have already been developed without adequate measures in place to accomplish disaster mitigation goals. When local governments adopt or amend zoning

84. John Laidler, *Natural Disaster Plans Get Scrutiny: 4 Area Cities Will Join in Collaborative Study*, BOSTON GLOBE, GLOBE NORTH, Apr. 15, 2004, at A1.

85. FRED BOSSELMAN & DAVID L. CALLIES, *THE QUIET REVOLUTION IN LAND USE CONTROL* (1971).

86. See generally STATE & REGIONAL COMPREHENSIVE PLANNING: IMPLEMENTING NEW METHODS FOR GROWTH MANAGEMENT (Peter A. Buchsbaum & Larry J. Smith eds., 1993).

87. See Patricia E. Salkin, *The Smart Growth Agenda: A Snapshot of State Activity at the Turn of the Century*, 21 ST. LOUIS U. PUB. L. REV. 271 (2002).

88. See Stephanie Perez, *New York City Drinking Water—Champagne or Beer?*, 12 PACE ENVTL. L. REV. 859 (1995). The New York City watershed is a collection of reservoirs and controlled lakes in upstate New York that are located in the Catskill, Croton, and Delaware watersheds in three counties and cover almost 2,000 square miles. See Marc A. Yaggi, *Impervious Surfaces in the New York City Watershed*, 12 FORDHAM ENVTL. L.J. 489 (2001). See also John R. Nolon, *The Erosion of Home Rule Through the Emergence of State-Interests in Land Use Control*, 10 PACE ENVTL. L. REV. 497 (1993) explaining that the city of New York attempted to address watershed regulations in their 1990 draft regulations by, among other things, requiring “500 foot buffer zones between new septic systems and water courses and limited new construction in buffer zones to ten percent of the land area.”

89. See Perez, *supra* note 88.

90. See Yaggi, *supra* note 88 explaining that Gov. George Pataki brought these groups together to negotiate a compromise to pending litigation that challenged the city’s authority to enact the regulations. Yaggi notes that “the purpose of the agreement was to consider the property rights and economic vitality of the communities in the watershed and to provide a framework for protecting drinking water.” *Id.* at 493.

91. *Id.*

92. *Id.* New York City committed to spend roughly \$260 million to purchase and protect the critical land; however, as part of the negotiations, the city agreed that it would only purchase lands from willing buyers and that it would not exercise its eminent domain powers.

93. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), *PLANNING FOR A SUSTAINABLE FUTURE: THE LINK BETWEEN HAZARD MITIGATION AND SUSTAINABILITY* 15 (2003).

94. See Alabama Coastal Hazards Assessment, *Hazard Mitigation Strategies, Town of Dauphin Island Zoning Ordinance Summary*, <http://www.csc.noaa.gov/products/alabama/htm/dizoning.htm> and Alabama Coastal Hazards Assessment, *Hazard Mitigation Strategies, City of Gulf Shores Zoning Ordinance Summary*, <http://www.csc.noaa.gov/products/alabama/htm/gszoning.htm>.

laws, it often means that uses that were once allowed, are no longer permitted under the new regime. As an early method of ensuring the acceptability of zoning, given this potentially harsh result, local governments began to grandfather in prior existing legal uses by identifying them as nonconforming uses. The early expectation was that eventually nonconforming uses would become conforming, especially since zoning ordinances typically contain provisions that limit a landowner's ability to enlarge, reconstruct, or repair nonconforming uses, even where the structure suffered damage due to a natural disaster.⁹⁵ Unfortunately, bringing all uses into conformity with changes in zoning proved to take longer than anticipated. To further facilitate the conversion of nonconforming uses to conforming uses, some municipalities have enacted amortization periods by the end of which the nonconforming use must cease. Amortization is an option for local governments to use, especially in severely disaster-prone areas, so long as the regulating municipality can adequately address the economic balancing required to enable the property owner to recoup his investment. This may be more difficult to accomplish with residential, as opposed to commercial, uses.⁹⁶

After the Great Flood of 1993 in the Midwest, the city of Des Moines, Iowa, realized that amidst the large-scale property damage experienced was severe damage to certain nonconforming structures.⁹⁷ Under the city's zoning ordinance and floodplain development regulations, nonconforming structures damaged in excess of 60% of replacement value were not permitted to be rebuilt or repaired, providing an effective land use regulation to mitigate potential future damage on the same parcel.⁹⁸

b. Overlay Zones

An overlay zone is a flexible zoning technique that enables a municipality to essentially layer an additional set of regulations on top of existing requirements in a particular zoning district often for the purpose of conserving open space and natural resources, or promoting certain types of development in specific designated areas.⁹⁹ The overlay zone is a

mapped overlay district that is superimposed over one or more designated districts in the zoning ordinance.¹⁰⁰

Local legislatures may utilize overlay zones when an area requires special protection or is vulnerable to some specific hazard,¹⁰¹ making them another effective regulatory tool for implementing a local hazard mitigation plan. The APA recommends the use of overlay districts as a natural hazard mitigation technique, and advises communities to include "procedures and criteria for the designation of . . . natural hazard area overlay districts" when drafting ordinances for areas that are prone to natural hazards.¹⁰² Furthermore, the APA encourages local governments to develop a list of uses and activities that should be prohibited in the overlay zone, therefore allowing the local government to implement its mitigation strategies in a manner that is specifically tailored to address the effects of natural hazards that pose the biggest threat to its community.¹⁰³

Overlay zones can be created for many different purposes. For example, in response to impermeable ground, making some areas prone to flooding when there is excessive rainfall or snowmelt, Coconino County, Arizona, adopted a floodplain management overlay zone as a means of mitigating the effects of flooding in the area.¹⁰⁴ Although the overlay zone does not totally prohibit or prevent development in areas that are known to be prone to floods, it does prohibit new construction in the "floodway" (a main channel required for the discharge of flood waters). In addition to offering protection from flooding, overlay zones can be used to mitigate damage from potential disasters in watersheds, tidal basins, hillsides, and other sensitive environmental areas.¹⁰⁵

c. Subdivision Regulations

Local governments may adopt subdivision laws to regulate the division of land into one or more parcels. Subdivision laws may be part of a zoning ordinance or they may exist separately regardless of whether a municipality adopts zoning. Local governments have wide discretion in creatively regulating subdivisions to simultaneously accomplish disaster mitigation goals. For example, municipalities can prohibit the subdivision of land in areas located within mapped floodplains.¹⁰⁶ In Colorado, local governments are specifically authorized by statute to require subdivision applicants to submit proper drainage plans to prevent erosion problems and flooding.¹⁰⁷ In California, one of the things the state recommends is that as a condition of approving de-

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Ironically, the time immediately following a natural disaster provides a community with a unique window of opportunity for inserting an ethic of sustainability in guiding development and redevelopment in high-risk areas. With forethought and planning, communities that are rebuilt in the aftermath of a natural hazard can be built back so that they are more resilient to future hazards. . . .

ANNA K. SCHWAB & DAVID J. BROWER (WITH MITIGATION PLANNING INITIATIVE GROUP, DEPARTMENT OF CRIME CONTROL & PUBLIC SAFETY), SUSTAINABLE DEVELOPMENT AND NATURAL HAZARDS MITIGATION 19 (1999).

96. For a more detailed discussion of amortization periods for nonconforming uses, see Margaret Collins, *Methods of Determining Amortization Periods for Non-Conforming Uses*, 3 WASH. U. J.L. POL'Y 215 (2000).

97. The Des Moines experience is recounted by City Corporation Counsel Roger A. Nowadzky in *Lawyering Your Municipality Through a Natural Disaster or Emergency*, URB. LAW., Winter 1995, at 9.

98. *Id.*

99. Sacramento Transportation Authority, *Glossary of Land-Use Terms*, http://www.sactaqc.org/Resources/primers/Glossary_Land_Use.htm.

100. JOHN R. NOLON, *OPEN GROUND: EFFECTIVE LOCAL STRATEGIES FOR PROTECTING NATURAL RESOURCES* 19 (Env'tl. L. Inst. 2003).

101. See Sacramento Transportation Authority, *Glossary of Land-Use Terms*, http://www.sactaqc.org/Resources/primers/Glossary_Land_Use.htm.

102. See Meck, *supra* note 69, ch. 9.

103. *Id.*

104. Coconino County Comprehensive Plan, *Public Safety Element*, <http://co.coconino.az.us/commdevelopment/ComprehensivePlan/PUBLICSAFETY.asp>.

105. See Nolon, *supra* note 100, at 19. This chapter contains a model Hillside Management Overlay District from the town of Putnam Valley, New York, which was enacted to, among other things, protect certain ridgelines and steeply sloped areas from erosion.

106. See SCHWAB & BROWER, *supra* note 95, at 14.

107. See Nolon, *supra* note 100, at 23 (citing COLO. REV. STAT. §§30-28-133, 31-23-214 (2001)).

velopment and subdivisions, local governments should require that applicants include appropriate facilities to assist and support wildfire suppression.¹⁰⁸ The town of North Salem, New York, offers one example of how local governments may integrate disaster mitigation goals into their local subdivision laws. The ordinance regulates, among other things, natural features, and provides that the planning and design of the subdivision plat must avoid cuts or fills that can result in potential soil erosion and excessive tree removal that may lead to water resource disturbance.¹⁰⁹ In addition, the local ordinance requires that applicants avoid construction that results in encroachment upon watercourses and water bodies; avoid filling or excavation of or encroachment on wetlands, floodplains, and other lands subject to flooding; and avoid removal of desirable vegetation.¹¹⁰

d. Clustering/Open Space

Although the promotion of open space is not specifically enumerated as a purpose in the Standard Zoning Enabling Act, open space has been routinely recognized as an appropriate goal of zoning.¹¹¹ Local governments may choose to require developers to cluster development on one portion of the parcel, with the remaining part of the parcel saved for open space and/or serving to protect critical natural resources. This technique can be an effective disaster mitigation tool restricting development in higher hazard-prone areas while still allowing the property owner to realize full development density of the parcel.

e. Site Plan Review

A number of states have enacted statutes that expressly authorize local governments to use site plan review as a means to regulate development in their jurisdictions.¹¹² A site plan is a scaled drawing or plan which shows the arrangement and layout of proposed structures, open space designations, or other public improvements, on a specific parcel or lot.¹¹³ In many cases, a site plan review of some kind is required before a zoning permit will be granted for development projects that involve new construction, or the expan-

sion of existing structures.¹¹⁴ The site plan review process provides local governments an opportunity to review the relationships between the proposed development and other on-site features.¹¹⁵

Site plan review can be a useful tool for local governments seeking to implement natural hazard mitigation plans. Although it cannot be used to determine whether or not a particular use is appropriate in a specific location, a matter that should be resolved by the zoning ordinance itself, the review process does allow local governments to exercise a limited degree of discretion when determining how well the proposal fits the characteristics of the site itself, and to impose conditions on the development if necessary to meet statutory standards.¹¹⁶ In this respect, local governments can use the site review process to examine the proposed development in relation to other on-site conditions, such as fault lines, steep slopes, shorelines, or other areas that are prone to natural disasters, and make a decision to grant or deny a permit and/or add conditions to an approval based on the objectives of the local hazard mitigation plan. For example, local governments may consider as part of site plan review the extent to which the proposed development adequately addresses stormwater and surface water drainage to properly drain the site and to minimize downstream flooding and nonpoint pollution.¹¹⁷

One local government that is using the site plan review process as a means to implement their natural hazard mitigation strategy is St. Petersburg, Florida. The city was named the top “repetitive loss community” in Florida in 1996 according to data released by FEMA.¹¹⁸ As part of their mitigation strategy, the city has dedicated itself to “[reducing] natural hazard impacts . . . by targeting repetitive flood loss and vulnerable properties for mitigation.”¹¹⁹ To implement this strategy, the city adopted a policy to promote the use of a site plan review. According to the comprehensive plan, “[s]ite plan review criteria shall consider flood potential and hurricane hazards, including evacuation levels and sheltering, in a comprehensive manner.”¹²⁰ Thus, by allowing the local planning officials to review the relationship between the proposed construction and potential flood and hurricane hazards, the city is able to promote construction that is “built to survive the effects of a 100 year storm.”¹²¹

f. Performance Standards

Local governments can also require, as part of their zoning ordinance or site plan and/or subdivision reviews, performance measures.¹²² For example, vegetation requirements such as tree ordinances can help to minimize flooding by preventing removal and destruction or by requiring replace-

108. GOVERNOR’S OFFICE OF PLANNING & RESEARCH, STATE OF CALIFORNIA, FIRE HAZARD PLANNING: GENERAL PLAN TECHNICAL ADVICE SERIES (2003), available at http://www.opr.ca.gov/publications/pdfs/Fire_Hazard_Planning_Final_Report.pdf.

109. See Nolon, *supra* note 100, at 22. Reprinted herein is an excerpt from the subdivision ordinance of the town of North Salem, New York. See TOWN OF NORTH SALEM, N.Y. SUBDIVISION OF LAW art. III, §200-16.

110. *Id.*

111. See NORMAN WILLIAMS JR. & JOHN M. TAYLOR, 1 AMERICAN LAND PLANNING LAW §10:21 (rev. ed. 2003).

112. See Meck, *supra* note 69, ch. 8. Some courts have held that the authority to conduct site plan review is implied and can be exercised by local governments without express statutory authority. See, e.g., *McCarran v. Town Plan. & Zoning Comm’n*, 161 Conn. 6, 282 A.2d 900 (Conn. 1971). Other courts have described the power to review site plans as part of the process for approving conditional uses and other special exceptions, or for approving amendment to the zoning map. See, e.g., *Colwell v. Howard County*, 31 Md. App. 8, 354 A.2d 210 (Md. 1976).

113. A site plan could include parking lot or yard designations, provisions for public access to streets or beaches, and more typically, the location of structures such as water and sewer lines, or storm drainage systems. See Meck, *supra* note 69, ch. 8.

114. See Meck, *supra* note 69, ch. 8.

115. *Id.*

116. *Id.*

117. See NOLON, *supra* note 100, at 23 (citing an excerpt from the site plan regulations of the town of Somers, New York).

118. City of St. Petersburg, *Comprehensive Plan, Chapter Four: Coastal Management Element*, <http://www.stpete.org/Comp%20Plan/Coastal%20Management.pdf>.

119. *Id.*

120. *Id.*

121. *Id.*

122. See MARYA MORRIS, SUBDIVISION DESIGN IN FLOOD HAZARD AREAS (APA PAS Report 1997).

ment. In areas that are prone to wildfires, local governments can help to mitigate the impact of fires on homes by requiring buffer areas that eliminate natural fuels around residences, such as requiring the clearing of small trees, fallen leaves, branches, pine needles and the like, for approximately 30 feet around a home.¹²³ Buffers are also employed through a creek use policy in Mecklenburg County, North Carolina, to help protect the region's drinking water.¹²⁴ The local law requires vegetative strips adjacent to streams, enabling the county to effectively use the vegetation's natural root systems to filter out many contaminants that otherwise would flow directly into the creek.¹²⁵

g. Critical Environmental Areas

Critical and sensitive environmental areas exist in every region of the country. Critical areas have been defined as areas that "contain or constitute natural resources sensitive to excessive or inappropriate development."¹²⁶ A number of states call on local governments to identify critical areas in comprehensive land use plans so that action can be taken through regulation, land acquisition, modification of private or public work projects, or other measures, to protect the areas' resources from exploitation or destruction.¹²⁷

Critical areas may also be defined as areas prone to natural hazards.¹²⁸ Because many local governments have the dual task of identifying and regulating critical or sensitive areas, as well as areas that are prone to natural hazards, protecting both types of areas with a single regulation can be an attractive solution.¹²⁹ As part of their model section for regulating critical areas and areas prone to natural disasters, the APA model ordinance includes provisions prohibiting particular uses, activities, and structures within critical or sensitive areas or areas that are prone to natural disasters.¹³⁰ The APA notes that this approach works whether a natural hazard can be viewed as endangering a critical and sensitive area or benefitting it—as is the case with small-scale forest fires.¹³¹

Many local governments have chosen to regulate areas that are prone to natural disaster, and critical or sensitive ar-

eas, using the same zoning ordinance.¹³² For example, in King County, Washington, critical areas are defined as "lands with natural hazards or lands that support certain unique, fragile or valuable resource areas" and could include: "areas at high risk of erosion, landslides, earthquakes or flooding; those above coal mines; or wetlands or lands adjoining streams, rivers, and other water bodies."¹³³ Similarly, when the city of Mill Creek updated its critical area ordinance in December 2004, it added a section on "geological hazards" which included areas susceptible to landslides, erosion, and seismic activity.¹³⁴

h. Steep Slope Ordinances

Local governments may enact as part of their zoning or other land use controls, restrictions on the development of lands located within steep slope areas. These laws can assist with erosion control and minimize the consequences of landslides. Development activities such as construction, excavation, grading, cutting, and filling can all work independently to undermine the stability of the land and create the potential for a landslide.¹³⁵ A steep slope ordinance is a law that is designed to, among other things, protect property from landslides by restricting development on land of a certain grade.¹³⁶

i. Incentive Zoning

Incentive zoning is a system by which the local government provides zoning incentives to developers in exchange for the creation of some form of community benefit.¹³⁷ The system allows the legislature to keep the existing zoning laws "in place, but permits more intensive development of the land in exchange for certain community benefits."¹³⁸ The "intensive development" often takes the form of an increased density, a larger building footprint than would otherwise be allowed, or adjustments to height or use requirements.¹³⁹ In exchange the developers would provide benefits such as parks or open space which would prohibit development in floodplains and could successfully be used as a disaster mitigation technique.

3. Land Preservation and/or Acquisition Techniques

There are a host of local land preservation and/or acquisition techniques that can be coordinated with local land use planning and zoning. For example, local governments may use transfer of development rights, purchase of development rights, and incentive zoning tools to protect certain

123. See Reda M. Dennis-Parks, *Healthy Forests Restoration Act—Will It Really Protect Homes and Communities?*, 31 *ECOLOGY L.Q.* 639 (2004). The author describes this type of approach as "defensible space" and makes a cogent argument as to how the use of defensible space is an effective means of protecting homes and communities from natural disasters.

124. Department of Emergency Management, State of North Carolina, *Case Study—Mecklenburg County Water Quality*, http://www.dem.dcc.state.nc.us/mitigation/case_mecklenburg1.htm. The state of North Carolina cites this approach as a model demonstrating the integration of water quality buffers and floodplain mapping.

125. *Id.*

126. Critical areas could include a particular land or water resource that protects or provides habitat for rare and endangered animals or plants, or they could be considered natural resources in themselves which are in need of protection, such as wetlands or aquifer systems. See Meck, *supra* note 69, ch. 9, at 9-3.

127. In some instances, the state may choose to go even further by imposing a statewide permitting procedure for certain types of critical or sensitive areas, thus preempting local government control. See, e.g., New Jersey Freshwater Protection Act, N.J. STAT. ANN. §§13:9B-1 (1999).

128. See Meck, *supra* note 69, ch. 9, at 9-3.

129. *Id.*

130. *Id.* at 9-8.

131. *Id.* at 9-9.

132. *Id.* at 9-3.

133. King County Department of Environmental Services, *Critical Areas Review: Frequently Asked Questions*, <http://www.metrokc.gov/ddes/acrobat/cib/21.pdf>.

134. MILL CREEK MUNICIPAL CODE UPDATE, tit. 18.06 (2004), available at <http://www.cityofmillcreek.com/community%20development/Code%20MPA/New%20Title%2018.06.pdf>.

135. John Nolon, *In Praise of Parochialism: The Advent of Environmental Law*, 26 *HARV. ENVTL. L. REV.* 403-04 (2002).

136. *Id.*

137. Pace Law School, *Incentive Zoning*, <http://www.law.pace.edu/landuse/bincent.html>.

138. *Id.*

139. *Id.*

lands from development. While these measures are often thought of primarily in terms of protecting green space, when coordinated with sound local mitigation planning, they are integral tools for steering development away from sensitive lands that may not be as suitable for development.

Where local governments prefer not to employ regulatory techniques to protect certain lands from development, they may use public funds to purchase property either voluntarily or through the use of eminent domain. For example, in the town of Boone, North Carolina, after the town's flood mitigation hazard plan called for the acquisition and relocation of 30 homes and 86 residents from one neighborhood, the town used the newly vacated land to meet another community need—the shortage of recreational facilities—and they planned for a multipurpose park with a flood-resistant pavilion for concerts and festivals, flood-resistant restrooms, and other athletic facilities.¹⁴⁰ In an effort to integrate water quality into floodplain management, Mecklenburg County, North Carolina, secured state funding to leverage its local financial commitment to acquire 116 flood-prone properties that would create open space enabling the county to maximize floodplain benefits.¹⁴¹

In addition, states provide generous conservation easement programs whereby private landowners may voluntarily place restrictive easements on their property prohibiting development—for a fixed period of time or permanently—in exchange for federal, state, and sometimes local tax breaks.

Another form of land use regulation that is relevant to disaster mitigation is the conservation easement. A conservation easement is a restriction placed on the development rights of a particular piece of land.¹⁴² These restrictions can prevent the owner from engaging in some or all development on the property and can also create an affirmative duty to maintain the land.¹⁴³ The method of creation arises from the common law, which has varied through the courts and state legislatures,¹⁴⁴ but as the name implies the restrictions will generally be used for conservation purposes, which include, but are not limited to, preserving the land for open space use and protecting natural resources.¹⁴⁵

States provide generous conservation easement programs to landowners who voluntarily place restrictive easements on their property—for a fixed period of time or permanently—in exchange for federal, state, and sometimes local tax breaks.¹⁴⁶ These “tax breaks may be significant enough for an owner who wishes to continue using the property in its present state to give a conservation easement, rather than sell one, solely in order to take advantage of the lower property taxes and income tax deduction.”¹⁴⁷ In addition, some nonprofit groups, such as the Nature Conservancy, may be willing to purchase development rights to help conserve land.¹⁴⁸

Conservation easements provide a safe method of restricting development in floodplains. Farmers along the Mississippi River have received “buyouts, which put their land in a conservation easement, meaning they would still own it, but it was given to flood control, as a natural wetland.”¹⁴⁹

IV. Strengthening the Front Line of Defense: A Good Offense

Local governments are vested with all of the authority needed to develop effective disaster mitigation plans. They are also routinely vested with authority to work cooperatively with neighboring jurisdictions to accomplish unified and coordinated plans. While this Article demonstrates that sometimes creative planning is done and solutions are put into place to implement the plans, and that this can occur in a coordinated fashion, there are a number of reasons why these are the exceptions.

First, federal and/or state legislation and implementing regulations regarding disaster mitigation plans should require intergovernmental coordinated action. This is especially welcome in the case of this type of planning because funding is available for the preparation of plans, weakening the argument that this would produce an unwelcome, e.g., unfunded, mandate on local governments. Furthermore, given the highly visible impact of natural disasters on people and property, required offensive planning to mitigate these potentially devastating effects is likely more politically palatable than typical land use planning and zoning processes. Where it is politically not feasible to require coordinated action, statutes, regulations, and all published technical assistance (including training) should contain clear language recommending such actions. In addition, competitive funding should be prioritized giving a preference for coordinated planning processes and products.

Second, the leadership within local governments turns over frequently. Municipal officials, both elected and appointed, typically do not serve with the same degree of longevity as career civil servants who staff FEMA and state emergency management offices. For example, in New York alone, the U.S. Department of State has estimated that turnover among those involved in local land use planning and

140. Department of Emergency Management, State of North Carolina, *Case Study—Boone*, http://www.dem.dcc.state.nc.us/mitigation/case_boone.htm.

141. Through the purchase of parcels, the county would “preserve and reclaim natural floodplains to improve water quality, protect wildlife habitat and open space, and provide recreational opportunities.” See Department of Emergency Management, State of North Carolina, *supra* note 124.

142. LINDA A. MALONE, ENVIRONMENTAL REGULATION OF LAND USE §6.45 (2003).

143. Meck, *supra* note 69, ch. 9, at 9-67.

144. *Id.* at 9-68. A common-law easement creation required the parties to be in “privity of contract” and “privity of estate” as well as having the easement “touch and concern the land.” *Id.* “The National Conference of Commissioners on Uniform State Laws adopted a Uniform Conservation Easement Act,” which has been adopted by 21 states. *Id.*

145. RESTATEMENT (THIRD) OF PROPERTY §1.6 (2000). The definitions of what qualifies as conservation may differ from state to state. See *cf.* W.S.A. 700.40 (2005) which protects burial sites and “historical, architectural, archaeological, or cultural aspects of real property.” *Id.*; NEB. REV. STAT. §76-2, 111 (2005); which does not specifically mention burial sites and distinguishes between conservation easements and preservation easements with the latter including “historical, architectural, archaeological or cultural aspects of real property.” *Id.*

146. See Meck, *supra* note 69, ch. 9, at 9-66.

147. *Id.*

148. Nature Conservancy, *Homepage*, <http://www.nature.org> (last visited Oct. 10, 2006). Purchasing the development rights to a parcel is generally cheaper than purchasing the property outright. See APA, GROWING SMART LEGISLATIVE HANDBOOK 9-65 (2002).

149. Timothy Egan, *California Storm Brings Rethinking of Development*, N.Y. TIMES, Jan. 15, 1995, at A1.

zoning decisionmaking is about one-third each year (roughly 10,000 out of 30,000 people). This means that there is a constant need for training at the municipal level to ensure that all participants start with the same information and understanding of the process and the opportunities. The commitment to training and education requires sustained federal and state funding, as well as creative methods of information-sharing across the country.

Third, the federal and state governments must enter into and fund strategic partnerships with nongovernmental organizations who have built-in communication processes with the natural constituencies for the design and implementation of local disaster mitigation programs. In addition to coordinating this network of engineers, planners, and other municipal officials, the government should strive to approach the challenges presented by the preparation of comprehensive disaster mitigation plans in an interdisciplinary fashion. For example, rather than settling for training programs where people with the same background and training make up the presenters and the audience, training programs should include cross-disciplinary speakers and audiences. This will help facilitate a better foundation and understanding of the technical aspects of disaster mitigation planning and will foster a greater understanding of the various roles, responsibilities, and authorities of the different responsible entities and individuals.

Fourth, federal and state emergency management offices must develop strategic partnerships with other governmental entities that interact with local officials on a host of planning and zoning issues. For example, environmental agencies, community affairs/planning agencies, housing agencies, and economic development agencies may each have funding programs and training and technical assistance that could appropriately incorporate disaster mitigation planning goals. Intragovernmental training and partnerships are just as critical as achieving intergovernmental cooperation and coordination.

Fifth, the federal and state governments must work with local governments to enable local plans to be based on the best available data through GIS. While the federal government and many state governments coordinate GIS data-sharing programs, the protocols for GIS data are still a work in progress, and although GIS offers the promise of significantly empowering localities to access up-to-date and accurate information, many local governments (particularly small rural municipalities) have not been able to invest in the technology. Required investments include not just the software, but the trained human resource to work with the required data sets and analysis. Absent local ability to collect and analyze data, better regional solutions must be developed and significant outreach and education is required to gain trust and cooperation for the use of data outside the control of the jurisdiction.

Sixth, a better job of “recognizing success” is necessary. News accounts are full of dollar figures that shock the public with the high cost of damages that result from natural disasters. The insurance industry and/or government needs to

recognize those local governments that have effective mitigation plans in place by not just reporting the costs associated with damages, but more importantly announcing a dollar value of cost savings resulting from proactive land use planning and regulatory controls that form a foundation of the disaster mitigation plan. More attention to the positive could prove an effective no-cost incentive for others to follow.

Seventh, local governments in many states are already empowered through state-authorized local environmental review to examine proposed land use and development activities for the purpose of assessing their impact on the environment.¹⁵⁰ These reviews need to be better coordinated with the goals and policies of state and local disaster mitigation plans (and where integrated, with local comprehensive land use plans as well as land use controls) as they present an opportunity that requires an examination of impacts, alternatives, and potential mitigation strategies. This is a powerful tool in the hands of local officials to ensure the implementation of disaster mitigation techniques, yet it can often be underutilized and misunderstood without adequate training, education, and technical assistance.

These strategies are recommended to appeal to the broadest cross-section of lawmakers and policymakers at all levels of government as they can garner wide public appeal and because they require relatively little or no additional investment of financial resources beyond what has recently been made available. Many of these recommendations are variations on strategies designed to foster greater intermunicipal cooperation in land use planning and zoning.¹⁵¹

V. Conclusion

The “Nation on Edge” is perhaps a metaphor for “local governments on the front line” who have, for the most part, jurisdiction over the land use and development activities of property that may be predictably in harm’s way. Fortunately, local governments have been historically vested with authority pursuant to the police power and other specific constitutional and statutory enactments, to regulate uses and activities on lands in a manner that protects the public health, safety, and welfare. Done in a reasonable manner that balances the economic interests of property owners with the interests of the public, land use planning and controls that are coordinated and integrated with myriad interjurisdictional and intrajurisdictional actions designed to promote disaster mitigation can help protect and preserve human life and property from unforgiving disasters. Therefore, public policies and programs at all levels of government must be strengthened to further support these municipalities to, among other things, enable them to appropriately and strategically exercise the authority they already possess.

150. See Meck, *supra* note 69, ch. 12.

151. See, e.g., Patricia E. Salkin, *The Politics of Land Use Reform in New York: Challenges and Opportunities*, 73 ST. JOHN’S L. REV. 1041 (Fall 1999) and Patricia E. Salkin, *Political Strategies for Modernizing State Land Use Statutes*, 8 LAND USE L. & ZONING DIG. 3 (1992).